

## PATENT ABSTRACTS OF JAPAN

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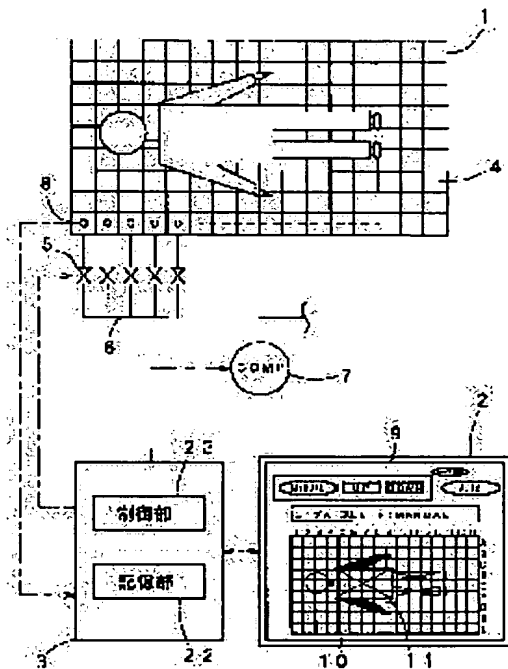
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## (54) MATTRESS DEVICE

(57)Abstract:

PROBLEM TO BE SOLVED: To easily drive and operate a desired cell.

SOLUTION: A mattress member 1 is provided with a composition having a plurality of cells 4 partitioning a body mounting part and cell driving means 5 and 7 individually vertically moving a mounting face of each cell 4. A display part 2 is provided with a composition having a touch panel 9 displaying a mattress phase diagram 10 corresponding to each cell 4 of the body mounting part. Mounting faces of the cells 4 can be vertically moved by driving corresponding cell driving means 5 and 7 by a control means 3 on the basis of a touch operation of the touch panel 9.



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## CLAIMS

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### [Claim(s)]

[Claim 1] The mattress equipment which carries out [ having had two or more cels which classify the body installation section and the mattress member which have the cel driving means which moves the installation side of each cel up and down independently, a display means have the touch panel on which the mattress state diagram corresponding to each cel of said body installation section displays, and the control means which drive the cel driving means which corresponds by carrying out touch actuation of said touch panel, and enable vertical movement of the installation side of a cel, and ] as the description.

[Claim 2] It is mattress equipment according to claim 1 which said mattress member is equipped with a body detection means to detect the body on said body installation section further, and is characterized by said control means displaying a body state diagram on the correspondence part of the mattress state diagram of said display means in piles based on the detection data in said body detection means.

[Claim 3] Said body detection means is mattress equipment according to claim 1 or 2 characterized by being a pressure detection means.

[Claim 4] Said body detection means is mattress equipment according to claim 1 or 2 characterized by being a temperature detection means.

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## DETAILED DESCRIPTION

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### [Detailed Description of the Invention]

#### [0001]

[Field of the Invention] This invention relates to mattress equipment excellent in the operability used for a bed etc.

#### [0002]

[Description of the Prior Art] Conventionally, there are some whose drive the body installation section achieved separate independence of each cel divided by plurality as a mattress classified into two or more cels, and enabled (reference, such as JP,2-307407,A, JP,7-275300,A, and JP,2000-325408,A).

[0003] Moreover, as other mattresses, a pressure sensor is formed in each cel and there are some which were made to carry out drive control of each cel so that a burden might not be placed on the body from the pressure and time amount which are

detected (reference, such as JP,10-277100,A).

[0004]

[Problem(s) to be Solved by the Invention] However, if which switch is operated on said conventional mattress even if it is the case where he wants to carry out drive actuation of the specific cel, correspondence of which cel drives is incomprehensible. For this reason, it is necessary to carry out, checking by trial-and-error, and there is a problem that operability is very bad.

[0005] then, this invention -- a desired cel -- easy -- a drive -- let it be a technical problem to offer operational mattress equipment.

[0006]

[Means for Solving the Problem] The mattress member in which this invention has the cel driving means which moves independently up and down two or more cels which classify the body installation section for mattress equipment as said The means for solving a technical problem, and the installation side of each cel, It considers as the configuration equipped with a display means to have the touch panel on which the mattress state diagram corresponding to each cel of said body installation section is displayed, and the control means which drives the cel driving means which corresponds by carrying out touch actuation of said touch panel, and enables vertical movement of the installation side of a cel.

[0007] Since each partition of the mattress state diagram displayed on a touch panel corresponds with each cel of a mattress member by this configuration, it becomes possible to carry out drive actuation of the desired cel simply and certainly.

[0008] When said mattress member be equip with a body detection means detect the body on said body installation section further and it be make said control means display a body state diagram on the correspondence part of the mattress state diagram of said display means in piles based on the detection data in said body detection means , it be a one division and it desirable at the point that whose the correspond cel be make it not only turn out which cel should be drive , but to drive certainly it become possible .

[0009] In addition, what is necessary is for said body detection means just to consist of a pressure detection means and a temperature detection means.

[0010]

[Embodiment of the Invention] Hereafter, the operation gestalt concerning this invention is explained according to an accompanying drawing.

[0011] Drawing 1 shows the mattress equipment concerning this operation gestalt. This mattress equipment consists of a mattress member 1, a display 2, and a control

unit 3.

[0012] The mattress member 1 consists of 144 cels 4 in which the body installation section was classified into six-line nine trains. A solenoid valve 5 and the air tube 6 are minded [ each / 4 ], and air is supplied or discharged from a compressor 7. It is possible to move the pneumatic pressure in each cel 4, i.e., the installation side of each cel 4, up and down, and to adjust the support condition of the body by this. Moreover, the pressure sensor 8 is formed in the installation side center section of each cel 4. A pressure sensor 8 detects the body on the mattress member 1, and since the range is pinpointed, it is used.

[0013] An indicating equipment 2 is equipped with a touch panel 9. As shown in drawing 2 (a), others and various carbon buttons and the comment display column are displayed on the Maine screen of a touch panel 9. [ state diagram / 10 / mattress ] The mattress state diagram 10 consists of plaid classified into six-line nine trains so that it may correspond to said cel 4. Moreover, based on the detection pressure force in said pressure sensor 8, either of the lying-down conditions (body pattern) of the body by which pattern registration was carried out as mentioned later is chosen as the mattress state diagram 10, and it is displayed on it as a body state diagram 11. A carbon button consists of the MANUAL carbon button 13, the UP carbon button 14, the DOWN carbon button 15, the AUTO carbon button 16, and a user registration carbon button 17. By carrying out touch actuation of the request part of the mattress state diagram 10, the MANUAL carbon button 13, the UP carbon button 14, and the DOWN carbon button 15 are used, when moving each cel 4 up and down manually. That is, the applicable cel 4 can be made to \*\* upper \*\* or the bottom by carrying out touch actuation of the request part of the mattress state diagram 10 after actuation of the MANUAL carbon button 13, and operating the UP carbon button 14 or the DOWN carbon button 15. The AUTO carbon button 16 is used when carrying out pressure control of each cel 4 according to the control program registered beforehand. The user registration carbon button 17 is used when changing to a user information registration screen. As shown in drawing 2 (b), the user selection carbon button 18, the various input columns 19, the registration carbon button 20, and the termination carbon button 21 are displayed on a user information registration screen. The user selection carbon button 17 is used in order to register beforehand the personal data inputted into each input column 18. Here, although registration of the personal data for 3 persons is enabled, the number can be set up freely. The height column, the weight column, the age column, and the sex column are contained in the input column 19. The ten key which is not illustrated performs the data input to each input column

19. After the data input to the input column, the registration carbon button 20 is used, in case the data is made to memorize. If the termination carbon button 21 is operated, it will change to said Maine screen.

[0014] The storage section 22 and operation part 23 are built in the control unit 3. Two or more storage of the body pattern is beforehand carried out by record format at the storage section 22. Drawing 5 (a) The example of the body pattern which – (c) is made to memorize is shown. In operation part 23, pattern recognition of the load point is carried out based on the detection pressure force in said pressure sensor 8. And one thing similar among the body patterns memorized in said storage section 22 is extracted. Furthermore, size is changed into the mattress state diagram which displayed the extracted body pattern on the touch panel 9 of said indicating equipment 2, and it is made to display as a body state diagram 11. Moreover, in operation part 23, drive control of the solenoid valve 5 for moving modification of a display and each cel 4 in a touch panel 9 up and down and a compressor 7 is performed based on touch actuation with a touch panel 9.

[0015] Next, it explains according to the flow chart which shows actuation of said mattress equipment to drawing 3 .

[0016] By the injection of a power source, the Maine screen is first displayed on a display 2 (step S1). And if touch actuation of the user registration carbon button 17 is carried out (step S2), it will change to the User Information registration screen (step S3), and personal data will be read (step S4). In this case, data will be inputted and registered into each input column if personal data have not been registered. If personal data are registered, touch actuation of the corresponding user selection carbon button will be carried out. Thereby, the time and effort of an input can be saved and it becomes possible to perform an efficient input.

[0017] Then, body detection processing is performed. In body detection processing, as shown in the flow chart of drawing 4 , it judges whether based on the detection pressure force in a pressure sensor 8, the user lies in the mattress member 1 (step S21). If it lies, pattern recognition of the location of the body will be carried out based on the detection pressure force in a pressure sensor 8 (step S22). And based on the obtained recognition pattern, the nearest thing is called among the body patterns memorized on the table of the storage section 22 (step S23). Based on the personal data (height, weight, etc.) registered, by changing every direction or some scale factors, the called body pattern adjusts size (step S24), and displays it on the mattress state diagram 10 displayed on a touch panel 9 in piles (step S15). Thereby, a body pattern can be displayed on the almost exact location of the mattress state



diagram 10 as a body state diagram 11, and it becomes possible to operate the desired cel 4 simply and certainly.

[0018] If body detection processing ( drawing 4 ) is completed, it will judge whether touch actuation of any of the MANUAL carbon button 13 or the AUTO carbon button 16 was carried out on the Maine screen (step S6). if touch actuation of the MANUAL carbon button 13 is carried out, touch actuation of the part corresponding to the cel 4 which wishes to drive among the mattress state diagrams 10 of a touch panel 9 will be carried out (step S7), and either the UP carbon button 14 or the DOWN carbon button 15 will be operated further -- the installation side of (step S8) and the corresponding cel 4 -- upper \*\* -- or it is made to lower--\*\* (step S9 or S10) On the other hand, if the AUTO carbon button 16 is operated, pressure control of each cel 4 will be performed based on the control program registered beforehand (step S11). For example, the pneumatic pressure of each cel 4 is changed periodically, a bed sore is prevented or the whole body is massaged.

[0019] In addition, with said operation gestalt, although it was made to move the installation side of a cel 4 up and down with pneumatic pressure, other media, such as water, can also be used. Moreover, it is also possible to substitute a spring, an air actuator, a pneumatic cylinder, and an oil hydraulic cylinder.

[0020] Moreover, although the body pattern was extracted based on the detecting signal in a pressure sensor 8, you may make it extract with said operation gestalt based on a temperature sensor or the thermography (for example, the far-infrared picturizing method for having used the principle of an infared radiation thermometer).

[0021]

[Effect of the Invention] Since the cel driving means which corresponds by carrying out touch actuation of the touch panel with which the mattress state diagram corresponding to each cel of the body installation section is displayed is driven and it was made to move a cel up and down according to this invention so that clearly from the above explanation, drive actuation of the desired cel can be carried out simply and certainly, and operability is good.

[0022] Since the body detection means was established especially, which cel should be made to drive can demonstrate the operability which was found at a glance and was excellent in relation with the body.

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## DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] It is the approximate account Fig. of the mattress equipment concerning this operation gestalt.

[Drawing 2] The Main screen where (a) is displayed on the display of drawing 1 , and (b) are the top views showing a user information registration screen, respectively.

[Drawing 3] It is the flow chart which shows the drive control in the control device of drawing 1 .

[Drawing 4] It is the flow chart which shows body detection processing of drawing 3 .

[Drawing 5] It is the top view showing the example of the body pattern which the storage section of drawing 1 is made to memorize.

[Description of Notations]

- 1 -- Mattress member
- 2 -- Display
- 3 -- Control unit
- 4 -- Cel
- 8 -- Pressure sensor
- 9 -- Touch panel
- 10 -- Mattress state diagram
- 11 -- Body state diagram
- 22 -- Storage section
- 23 -- Operation part